

MEMBRANE WATERPROOFING FOR BURIED STRUCTURES

Effective: October 4, 2016

Description. This work shall consist of furnishing and applying a self adhesive membrane waterproofing system to the top slab and sidewalls, or portions thereof, for buried structures as detailed on the contract plans.

Materials. The material used in the waterproofing system shall consist of a cold-applied, self-adhering membrane incorporating a woven or non-woven polypropylene mesh or fiberglass reinforcement with release film on one side.

The sheet membrane shall have the following physical properties:

Physical Properties	
Thickness ASTM D 1777	60 mils (1.500 mm) min.
Width	36 inches (914 mm) min.
Pliability [180° bend over 1/4 inch (6 mm) mandrel @ -25 °F (-32 °C)] ASTM D 146	No Effect
Elongation ASTM D 412 (Die C)	300% min
Puncture Resistance-Membrane ASTM E 154	40 lb (18 kg) min.
Permeance (Grains/ft ² /hr/in Hg) ASTM E 96, Method B	0.1 max.
Water Absorption (% by Weight) ASTM D 570	0.2 max.
Adhesion to concrete ASTM D 903	5.0 lb/in (89 g/mm) min.

Certification: Prior to approval and use of the material the Contractor shall submit, to the Engineer, a notarized certification by an independent test laboratory stating that the materials conform to the requirements of these specifications. The certification shall include or have attached specific results of tests performed on the material supplied. The Engineer may at his option require samples of any material for testing. Materials may be accepted on certification but are subject to control and/or approval by subsequent testing.

Construction. The areas requiring waterproofing shall be prepared and the waterproofing installed in accordance with the manufacturer's instructions. Surfaces to be waterproofed shall be smooth and free from projections which might damage the waterproofing membrane. Projections or depressions on the surface on which the membrane is to be applied that may cause damage to the membrane shall be removed or filled as directed by the Engineer. The surface shall be power washed and cleaned of dust, dirt, grease, and loose particles, and shall be dry before the waterproofing is applied.

The installation of the sheet membrane shall be such that all joints are shingled to shed water by commencing from the lowest elevation of the buried structure's top slab and progress towards the highest elevation. The membrane strips shall be overlapped a minimum of 2 ½ inches (64 mm). The membrane shall be smooth and free of wrinkles and there shall be no depressions in horizontal surfaces of the finished waterproofing.

Sealing bands at joints between precast segments shall be installed prior to the sheet membrane being applied. Where the waterproofing membrane and sealing band overlap, the installation shall be planned such that water will not be trapped or directed underneath the membrane or sealing band.

Care shall be taken to protect and to prevent damage to the membrane surface prior to and during backfilling operations. The sheet membrane shall be removed as required for the installation of slab mounted guardrails and other appurtenances. After the installation is complete, the sheet membrane shall be repaired and sealed against water intrusion according to the manufacturer's instructions and to the satisfaction of the Engineer.

Replace the last paragraph of Article 540.06 Precast Concrete Box Culverts and replace with:

Handling holes shall be filled with a polyethylene plug. The plug shall not project beyond the inside surface after installation nor project above the outside surface to the extent that may cause damage to the membrane. When metal lifting inserts are used, their sockets shall be filled with mastic or mortar compatible with the membrane.

Method of Measurement. The waterproofing system will be measured in place, in square yards (square meters) of the concrete surface to be waterproofed.

Basis of Payment. This work will be paid for at the contract unit price, per square yard (square meter) for MEMBRANE WATERPROOFING FOR BURIED STRUCTURES.